Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-32. (Canceled)

33. (Currently amended) A diploid mammalian cell made by making a mammalian cell having a mismatch repair deficiency phenotype, comprising inactivating the mismatch repair system of the mammalian cell by disrupting both copies of a gene essential for mismatch repair, wherein both *Msh2* alleles are inactivated and the cell is a *dMsh2-9* mouse embryonic stem cell (ATCC deposit number RH532).

34. (Withdrawn – Currently amended) A method for stably incorporating through homologous recombination a donor DNA molecule into the genome of a mammalian recipient cell, wherein the recipient cell is the cell of claim 33, ~~that has a mismatch repair deficiency phenotype,~~ comprising transforming the recipient cell having a mismatch repair deficiency phenotype with a donor DNA molecule that is obtained from a donor cell, wherein the donor DNA molecule is stably integrated into the genome of the recipient cell through homologous recombination with a homologous recipient DNA molecule, and wherein the sequence of the donor DNA molecule is not identical with the sequence of the homologous recipient DNA molecule.

35. (Withdrawn) The method of claim 34, wherein the nucleotide sequence of the donor DNA molecule diverges from the nucleotide sequence of the homologous DNA molecule in the recipient cell by about 0.6% to about 5%.

36. (Withdrawn) The method of claim 34, wherein the nucleotide sequence of the donor DNA molecule diverges from the nucleotide sequence of the homologous DNA molecule in the recipient cell by about 0.6% to about 30% in the region where homologous recombination can take place.

37. (Canceled)

38. (Withdrawn) The method of claim 34, wherein the mammalian recipient cell is obtained from a cell line that is cultured *in vitro*.

39. (Canceled)

40. (Withdrawn) The method of claim 34, wherein at least one of the nucleotide base or base pairs in the donor DNA is modified *in vitro* prior to transformation.

41. (Withdrawn) The method of claim 40, wherein the modification is a point mutation, an insertion of base pairs, or a deletion of base pairs from the donor DNA molecule, and wherein the modified donor DNA molecule diverges from the nucleotide sequence of the homologous DNA molecule in the recipient cell by about 0.6% to about 5%.

42. (Withdrawn) The method of claim 40, wherein the modification is a point mutation, an insertion of base pairs, or a deletion of base pairs from the donor DNA molecule, and wherein the modified donor DNA molecule diverges from the nucleotide sequence of the homologous DNA molecule in the recipient cell by about 0.6% to about 30% in the region where homologous recombination can take place.

43. (Withdrawn) The method of claim 34, wherein the donor DNA molecule is a chromosomal DNA fragment that is inserted into a YAC or cosmid vector.

44. (Withdrawn) The method of claim 34, wherein the donor DNA molecule is a double-stranded oligonucleotide 10-100 bases in length, and wherein the nucleotide sequence of the donor DNA molecule diverges from the nucleotide sequence of the homologous DNA molecule in the recipient cell by at least one base pair, but no more than 5% of all base pairs.

45. (Withdrawn) The method of claim 34, wherein the donor DNA molecule is a single - stranded oligonucleotide 10-100 bases in length, and wherein the nucleotide sequence of the donor DNA molecule diverges from the nucleotide sequence of the homologous DNA molecule in the recipient cell by at least one base, but no more than 5% of all bases.

46. (Withdrawn) The method of claim 34, wherein the donor DNA molecule comprises a selectable marker gene flanked by two sequences, wherein one flanking sequence has at least 95% sequence identity to the corresponding sequence of the recipient DNA molecule and the other flanking sequence comprises a repetitive sequence.

47. (Withdrawn) The method of claim 46, wherein the repetitive sequence is a long interspersed element (LINE) or a short interspersed element (SINE).

48. (Withdrawn-Currently amended) A method of making a transgenic mouse ~~animal~~, comprising (a) inserting a genetically modified stem cell prepared according to the method of claim 34 into a blastocoel, (b) implanting the blastocoel into a womb of a female host ~~animal~~ mouse to make the female ~~animal~~ mouse pregnant, and (c) carrying the pregnancy to term to obtain a viable transgenic ~~animal~~ mouse.

49. (Canceled)